EUROPEAN PATENT OFFICE

Patent Abstracts of Japan

PUBLICATION NUMBER : 2000004122

PUBLICATION DATE : 07-01-00

APPLICATION DATE : 16-06-98
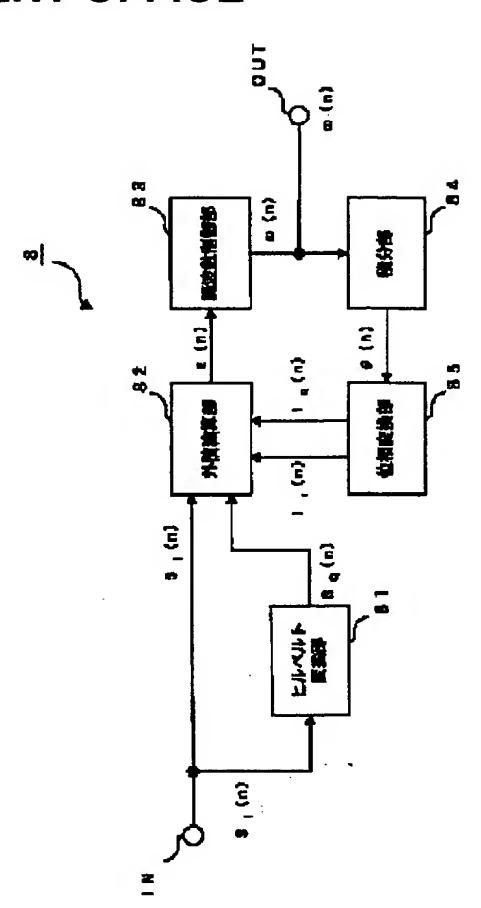
APPLICATION NUMBER : 10168150

APPLICANT : ICOM INC;

INVENTOR : NAKAJIMA NOBUO;

INT.CL. : H03D 3/00

TITLE : ANGLE DEMODULATOR

ABSTRACT : PROBLEM TO BE SOLVED: To provide the angle demodulator which can correctly demodulate an angle- modulated wave even if the phase of the anglemodulated wave is shifted by ≥2π radians.

SOLUTION: An FM-modulated wave is converted to a digital IF signal, which is supplied to a Hilbert conversion part 81 and an outer product arithmetic part 82. The Hilbert conversion part 81 shifts the phase of the IF signal by 90° and supplies it to the outer product arithmetic part 82. An integration part 84 calculates the phase of a cosine wave of angular frequency that is specified by a frequency control part 83 and a phase conversion part 85 calculates momentary values of the cosine wave and the signal generated by shifting the phase of the cosine wave by 90° and supplies them to the outer product arithmetic part 82. The outer product arithmetic part 82 supplies the outer product of a vector including the values of the IF signal and the signal from the Hilbert conversion part 81 and a vector including the value supplied from the phase conversion part 85. A frequency control part 83 determines the value of a angular frequency by performing proportional and integral control over the external product and supplies it to the integration part 84. A digital signal representing the value of the angular frequency is converted from digital to analog and reproduced as a sound.